Virga Jessecollege
Hasselt
Datum:
Klas: V
Naam:................................

Toets WISKUNDE
leerkracht: Karel Appeltans
schooljaar 20..-20..
Studierichting:
Aantal uren wiskunde: 6

Bewijs:

	1. $\cos^2 x + \cos^2 y = 1 + \cos(x+y) \cdot \cos(x-y)$
	2. $\cos^2 x + \sin^2 y = 1 - \sin(x+y) \cdot \sin(x-y)$
	3. $\dfrac{\sin x + \sin y}{\cos x - \cos y} = \cot\left(\dfrac{y-x}{2}\right)$
	4. $(\sin\alpha + \sin\beta)^2 + (\cos\alpha + \cos\beta)^2 = 4\cos^2\left(\frac{\alpha-\beta}{2}\right)$
	5. $\cot x - \cot y = \dfrac{\sin(y-x)}{\sin x \cdot \sin y}$
	6. $\cos^2 x - \cos^2 y = \frac{1}{2}\left(\cos(2x) - \cos(2y)\right)$
	7. $\tan^2\alpha \cdot \tan^2\beta = 1 - \dfrac{\cos^2\beta - \sin^2\alpha}{\cos^2\alpha \cdot \cos^2\beta}$
	8. $\cos\left(\alpha - \frac{5\pi}{6}\right) - \cos\left(\alpha + \frac{5\pi}{6}\right) = \sin\alpha$
	9. $\cot x - \tan x = 2\cot(2x)$
	10. $\sec(\alpha+\beta) + \sec(\alpha-\beta) = \dfrac{2\cos\alpha\cos\beta}{\cos^2\alpha \cdot \cos^2\beta - \sin^2\alpha \cdot \sin^2\beta}$
	11. $\tan\left(\frac{\pi}{4} + x\right) + \tan\left(\frac{\pi}{4} - x\right) = \dfrac{2}{\cos(2x)}$
	12. $\sin^2\frac{x}{2} + \sin^2\frac{y}{2} = 1 - \frac{1}{2}\left(\cos x + \cos y\right)$
	13. $\sin^2 x + \sin^2 y = 1 - \cos(x+y) \cdot \cos(x-y)$
	14. $2\sec x = \tan\left(45° - \frac{x}{2}\right) + \cot\left(45° - \frac{x}{2}\right)$
	15. $(\cos\alpha - \cos\beta)^2 + (\sin\alpha + \sin\beta)^2 = 4\sin^2\left(\frac{\alpha+\beta}{2}\right)$
	16. $2\csc x = \tan\frac{x}{2} + \cot\frac{x}{2}$
	17. $\dfrac{\cos\frac{x}{2} + \sin\frac{x}{2}}{\cos\frac{x}{2} - \sin\frac{x}{2}} = \dfrac{1 + \sin x}{\cos x}$
	18. $\cos^2\alpha + \cos^2\left(\frac{2\pi}{3} + \alpha\right) + \cos^2\left(\frac{2\pi}{3} - \alpha\right) = \frac{3}{2}$
	19. $\dfrac{\cos 2x}{\sin x} + 2\sin x = \csc x$
	20. $\sin(2x) + \sin(4x) + \sin(6x) = 4\cos x \cdot \cos(2x) \cdot \sin(3x)$
21	$\dfrac{\sin\theta + \sin 3\theta + \sin 5\theta + \sin 7\theta}{\cos\theta + \cos 3\theta + \cos 5\theta + \cos 7\theta} = \tan 4\theta$
22	$\dfrac{2(\sin\theta + \cos\theta)}{1 - \cos 2\theta + \sin 2\theta} = \csc\theta.$

23	Given $0 < x < \dfrac{\pi}{2}$.
	Show that $\dfrac{\tan x - \sin^2 x}{\tan x + \sin^2 x} = \dfrac{4}{2 + \sin 2x} - 1$.

24	Show that $\dfrac{\sin 2A}{1 + \cos 2A} = \tan A$.
	Hence, or otherwise, prove that $\tan 22\frac{1}{2}^\circ = \sqrt{2} - 1$.

25	**(i)** Show that $\dfrac{1 - \tan^2 A}{1 + \tan^2 A} = \cos 2A$.
	(ii) Hence, or otherwise, find the values of the integers l and k such that
	$$\dfrac{1 - \tan^2(135° - A)}{1 + \tan^2(135° - A)} = l\sin kA$$
	for all values of A for which $\tan(135° - A)$ is defined.

26	$$\dfrac{\csc \beta + \sec \beta}{\csc \beta - \sec \beta} = \dfrac{1 + \sin 2\beta}{\cos 2\beta}$$

27	If $\sin \alpha = \dfrac{4}{5}$ and α is in quadrant II and $\cos \beta = \dfrac{5}{13}$ and β in quadrant IV, find $\tan(\alpha + \beta)$.
	A. $\dfrac{56}{33}$
	B. $-\dfrac{63}{33}$
	C. $-\dfrac{16}{33}$
	D. $\dfrac{4}{5}$
	E. Answer not given

28 | $\csc \beta = \dfrac{1}{2}\left(\tan\left(\dfrac{\beta}{2}\right) + \cot\left(\dfrac{\beta}{2}\right) \right)$, $\qquad 0 < \beta < \pi$.

Prove that $\tan x = \dfrac{2}{\sin 2x} - \dfrac{1}{\tan x}$, where $0 < x < \dfrac{\pi}{2}$.